UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SHIH-JONG J. LEE
15418 SE 53RD PLACE
BELLEVUE, WA 98006

EXAMINER
CHANG, JON CARLTON

ART UNIT	PAPER NUMBER
2623	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/871,991	OH ET AL.
	Examiner	Art Unit
	Jon Chang	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-17 and 19* is/are rejected.

7) ☒ Claim(s) *18* is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *31 May 2001* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Claim Objections

1.   Claims 3 and 12 are objected to because of the following informalities:

In claim 3, at line 2, "square" should read, "squares".

In claim 12, at line 1, "weigh" should read, "weight".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2.   Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

In claim 1, at line 4, "the input image" lacks proper antecedent basis.

In claim 4, at line 1, "the accumulation rule" lacks proper antecedent basis.

In claim 5, "the accumulation rule" lacks proper antecedent basis.

In claim 7, "the mixing method" lacks clear antecedent basis.

In claim 8, "the mixing method" lacks clear antecedent basis.

in claim 9, "the mixing method" lacks clear antecedent basis.

Claims not mentioned specifically depend from indefinite antecedent claims.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1, 2 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by

U.S. Patent 6,151,403 to Luo.

As to claim 1, Luo discloses a robust method for image feature estimation

comprising:

a. receiving at least one learning image input (the images resulting from the

sampling a plurality of eyes; column 5, line 39);

b. accumulating a weight image from the at least one learning image (the weight

image is the template, the accumulation is performed using averaging; column 5, lines

38-41);

c. processing the input image using the accumulated weight image to

produce a weight image output (an image is processed using a cross-correlation with

the template; column 5, line 50 to column 8).

With regard to claim 2, since the accumulation is performed using averaging, it

follows that the accumulated weight image comprises a weighted mean image.

With regard to claim 5, Luo discloses the method of claim 1 wherein the accumulation rule includes a simple average (Luo utilizes averaging; column 5, lines 38-41).

5.   Claims 1, 2 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication US 2002/0106112 A1 (hereinafter "Chen").

As to claim 1, Chen discloses a robust method for image feature estimation comprising:

a. receiving at least one learning image input ("sample eye images"; paragraph [0044], last sentence);

b. accumulating a weight image from the at least one learning image (the weight image is the eye template, and the accumulation is by averaging; paragraph [0044], last sentence);

c. processing the input image using the accumulated weight image to produce a weight image output (the input image is the image in which the eyes are being located, which is processed using the template using a method called "summation of squared difference"; paragraph [0044]).

With regard to claim 2, since the accumulation is performed using averaging, it follows that the accumulated weight image comprises a weighted mean image.

With regard to claim 5, Chen discloses the method of claim 1 wherein the accumulation rule includes a simple average (Chen utilizes averaging; paragraph [004], last sentence).

6.   Claims 11-17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by

the article, "Vehicle Segmentation and Classification Using Deformable Templates" by

Jolly et al. (hereinafter "Jolly").

Regarding claim 11, Jolly discloses a robust method for image feature estimation

comprising:

a. receiving at least one image input (Fig.2);

b. adjusting a weight image by iteration responsive to a cost function (the weight

image is the deformable vehicle template, section 2; the Metropolis algorithm which

minimizes an energy function, is basically a cost function, section 4.1);

c. estimating using the adjusted weight image to produce a fitting result (section

4.1; the idea is to deform or adjust the template to resemble or "fit" the vehicle, page

296, left column, text below figure 4).

Regarding claim 12, Jolly discloses the method of claim 11 wherein the weight

image is modified using a factor that is a non-increasing function of the fitting error

(section 4.1; T_k, which is a monotonically decreasing sequence).

With regard to claim 13, Jolly discloses the method of claim 12 wherein the

factor is a function of a parameter T (section 4.1, parameter T_k).

Regarding claim 14 Jolly disclose the method of claim 13 wherein a simulated

annealing method is used to modify the weight image (section 4.1, the Metropolis

algorithm is a simulated annealing procedure).

Regarding claim 15, Jolly discloses the method of claim 14 wherein T is non-

increasing with respect to the number of iterations (since the parameter is a

monotonically decreasing sequence, it is non-increasing, with respect to the number of

iterations).

Regarding claim 16, Jolly also discloses that T is a constant (note for example as

k approaches $\propto$, T_k approaches 0. Note also for any particular value of k, T_k is a

constant (section 4.2, equation for T_k).

As to claim 17, Jolly discloses the method of claim 11 wherein adjusting a weight

image by iteration further comprises:

a. performing fitting using an adjusted weight image to generate a fitting result

(section 4.1);

b. determine cost function values from the fitting result (section 4.1);

c. adjusting the weight image using cost function values (section 4.1, based on

the deformation parameters);

d. repeat steps a, b, and c until a stopping criteria is met (section 4.1, until the

minimum is found).

Regarding claim 19, Jolly discloses the method of claim 17 wherein the stopping

criteria is determined by the maximum allowed number of iterations (section 4.1, the

number of iterations is restricted).

7.   Claims 11 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by

the article, "A Hierarchical and Adaptive Deformable Model for Mouth Boundary

Detetion" by Mirhosseini et al. (hereinafter "Mirhosseini").

With regard to claim 11, Mirhosseini discloses a robust method for image feature estimation comprising:

a. receiving at least one image input (human face image, see Abstract);

b. adjusting a weight image by iteration responsive to a cost function (mouth model is optimized, section 2.1, step 3; section 3.1);

c. estimating using the adjusted weight image to produce a fitting result (section 2.1, steps 3 and 4; section 3.1).

As to claim 17, Mirhosseini discloses the method of claim 11 wherein adjusting a weight image by iteration further comprises:

a. performing fitting using an adjusted weight image to generate a fitting result (section 2.1, step 3);

b. determine cost function values from the fitting result (section 2.1, step 4, which returns to step 3);

c. adjusting the weight image using cost function values (section 2.1, step 3);

d. repeat steps a, b, and c until a stopping criteria is met (section 2.1, step 4).

8.   Claim 11 is rejected under 35 U.S.C. 102(a) as being anticipated by the article, "Initialization of Deformable Templates Using Weighted Gaussian Approximations" by Park et al. (hereinafter "Park").

As to claim 11, Park discloses a robust method for image feature estimation comprising:

a. receiving at least one image input (inherent);

b. adjusting a weight image by iteration responsive to a cost function (the

template is a weight image, sections 2.1 and 2.2; cost function is used in section 3);

c. estimating using the adjusted weight image to produce a fitting result (section

3, local minimum is the best-fit template).

Allowable Subject Matter

9.   Claim 18 is objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims.

10.   Claims 6-10 would be allowable if rewritten to overcome the rejection(s) under 35

U.S.C. 112, second paragraph, set forth in this Office action and to include all of the

limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jon Chang whose telephone number is (703)305-8439.

The examiner can normally be reached on M-F 8:00 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Jon Chang
Primary Examiner
Art Unit 2623

Jon Chang
June 1, 2004